

chem

Chemistry

Possible Practicals (non-exhaustive, from syllabus)	
1	Qualitative Analysis
2	Speed of Reaction
3	Measurement of Temperature (Chemical Energetics)
4	Investigations
5	Filtration
6	Paper Chromatography
7	Quantitative Experiments

Possible Topics Tested (Theory)	
Topic 1.1	Choosing suitable apparatus
Topic 1.2	Separation Techniques
Topic 4.2	Mole Concept
Topic 5	Acids & Bases
Topic 7	Redox Reactions
Topic 8.2	Halogen Displacement Reactions
Topic 8.3	Metal Displacement Reactions (Reactivity Series)
Topic 9	Exothermic and Endothermic Reactions
Topic 10	Rate of reactions

Apparatus	Record as...
Metre Rule	0.1 cm
Electronic Balance	0.1 g 0.01 g
Digital Stopwatch	1 s
Measuring Cylinder	0.5 cm ³
Burette	0.05 cm ³
Pipette	Follow exact value
Thermometer (-10 ~ 110°C)	0.5°C

NOTE: Understanding the reactions that take place may help in answering questions.

Redox Reactions

- Oxidation – intensifying colour
 - e.g banana becomes brown when left
- Reduction – fading colour
 - e.g bleaching of clothes

Test for reducing agent: Acidified potassium manganate(VII) solution

- solution changes colour from purple to colourless

Test for oxidising agent: Potassium iodide solution

- solution changes colour from colourless to brown
 - iodine confirmed with starch test, turn blue-black
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Qualitative Analysis:

- QA table will be provided during the exam.
- 'add till in excess/no further change' → at least $\frac{3}{4}$ of the test tube

Cation test:

- bring marker to label test tubes
- do not add too much alkali at a time → may miss on any ppt
- record colour of ppt & whether it dissolves in excess alkali
- if dissolve, record colour of formed solution

Anion test

- same thing

Example of recording(s):

- A (colour) ppt is formed, **insoluble** in excess (compound)
- A (colour) ppt is formed, **soluble** in excess to form (colour) solution
- A pungent gas is produced, turns moist red litmus paper blue. Ammonia gas is produced
- Bubbles are formed, gives white ppt with limewater. Carbon dioxide gas is produced.
- A white ppt is formed.
- Bubbles are formed, extinguishes a lighted splint with a pop sound. Hydrogen gas is produced.
- A (colour) solid is deposited
- (colour) solution turns (colour)
- Test tube feels warm as the reaction is **exothermic**.
- Bubbles are formed, relights a glowing splint. Oxygen gas is produced
- No observable change

Gas test

- CO₂, don't add too much limewater as it will take longer for reaction to take place
 - use dropper pipette to take in CO₂ and then deposit inside the limewater
- Recording:
 - Observation: effervescence is observed. (colour) and (odour) gas is produced.
 - Gas confirmation test (use qa)
 - Identification of gas (use qa)

science (chem,phy) practical notes

Answering conclusion questions (open-ended stuff)

- use chemical formula of ion (e.g. Cu^{2+}) or name of ion (e.g. Copper(II) ion)
 - evidence – give test conducted, followed by results
 - e.g. When sodium hydroxide is added to solution P (test conducted), **a blue ppt is formed, insoluble in excess sodium hydroxide (results)**.
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Chem Energetics

- Final > Initial or +ve Temp Change – exothermic reaction
 - Final < Initial or -ve Temp Change – endothermic reaction
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Rate of reaction: collision theory

- Inc temp / inc conc / dec particle size (eg powdered) – increase in ROR
 - Dec temp / dec conc / inc particle size (eg granules) – decrease in ROR
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Metal Displacement

- Group 17: Fluorine, Chlorine, Bromine, Iodine
 - Recording if displaced
 - The (solution original colour) turns (new colour)
 - A (solid colour) is deposited
 - Test tube feels warm (if exothermic reactions)
 - Recording if not displaced
 - No observable change / No visible change (better to go with the former)
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Dry Heating (of solid):

- gentle heating
 - hold bottom part at hottest part of flame (tip of blue cone) for 1s
 - remove for 2s, repeat for at least 15x
- strong heating
 - decomposes compounds, gases given off (test) and residue usually left over
- recording
 - change of solid colour
 - (colour) solid turns (colour)
 - change of state, s → L
 - (colour) solid melts to form (colour) liquid
 - water droplets observed at the side of the test tube
 - change of state L → s
 - liquid solidifies to form (colour) solid
 - water droplets observed at the side of the test tube
 - further change of colour
 - solid/liquid turns (colour) on further heating
 - final product upon cooling
 - (colour) residue formed on cooling
 - gas test obsv + identity (ref above)

credits

credits for those who helped me make these during o-level period (in 2025!):

- my friends
- my school notes
- some of grail's notes!

document is separated into two:

- combined sci (**chem**) practical notes
- combined sci (**phy**) practical notes

all the best for your practical!